SHORT COMMUNICATION

PALAEOEPIDEMIOLOGY OF TUBERCULOSIS IN HUNGARY: PRELIMINARY RESULTS

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The purpose of the present study is to review the presence of osseous tuberculosis as a specific infectious disease in past human populations in Hungary. More than five thousand dry skeletons (n=5,848) have been examined from this point of view, all of which come from the Great Hungarian Plain and date from the time period of the 7–17th centuries (collections of the Department of Anthropology, József Attila University, Szeged). Our results are summarized in the Tables 1 and 2.

We have differentiated four chronological groups: the so-called „Avar Age" (7–8th centuries); the „Hungarian Conquest Period" (10th century); the „Árpádian Age" (11–13th centuries); and the so-called Hungarian „Late Middle Ages" (14–17th centuries).

We have diagnosed skeletal tuberculosis in 27 cases, several of which have already been published (see the list of references). Our results reveal that tuberculosis was present in Hungary almost all through the Middle Ages. Skeletal tuberculosis seems to have been more widespread in the 7–8th and the 14–17th centuries, while it is less frequent in the Arpadian Age. It has to be mentioned that Avar Age cemetery series without cases of skeletal tuberculosis are very rare. We have found 14 cases among the 1,988 examined specimens from this period. The living conditions especially in the Late Avar Period (8th century) — large agricultural settlements, animal breeding, rural life-style, high density of population, poverty (proved by archaeological data) — must have contributed to the spread of tuberculosis.

The absence of any signs of TB in the material from the period of the Hungarian Conquest has to be emphasized. Although our Hungarian ancestors kept animals (including cattles), their life-style was different from the late Avar sedentary life-style (8th century). The cases of skeletal tuberculosis have been found to be more frequent in the subsequent centuries following that the ancient Hungarians accompanied by other peoples settled down in the Carpathian Basin. We have concluded that in addition to other conditions (immunological, microbiological, etc.), the change towards sedentary life-style and the consequent increase in the density of human and domestic animal populations could certainly result in the increase of the disease frequency in the later part of the medieval period.

In accordance with the literature's data, our research has revealed that tuberculous alterations of spinal remains appear in the highest number in all of the examined periods. However, there are some differences between the series from the early medieval period (in sensu lato, our first three chronological groups) and the Late Middle Ages in the morphology and skeletal pattern of the lesions. Skeletal tuberculosis is not associated with rib lesions in the early medieval material. The revealed cases of osteo-articular tuberculosis dating from the Avar Age or the Arpadian Age show the typical characteristics of advanced-stage „healed" alterations (Figs. 1 and 2).

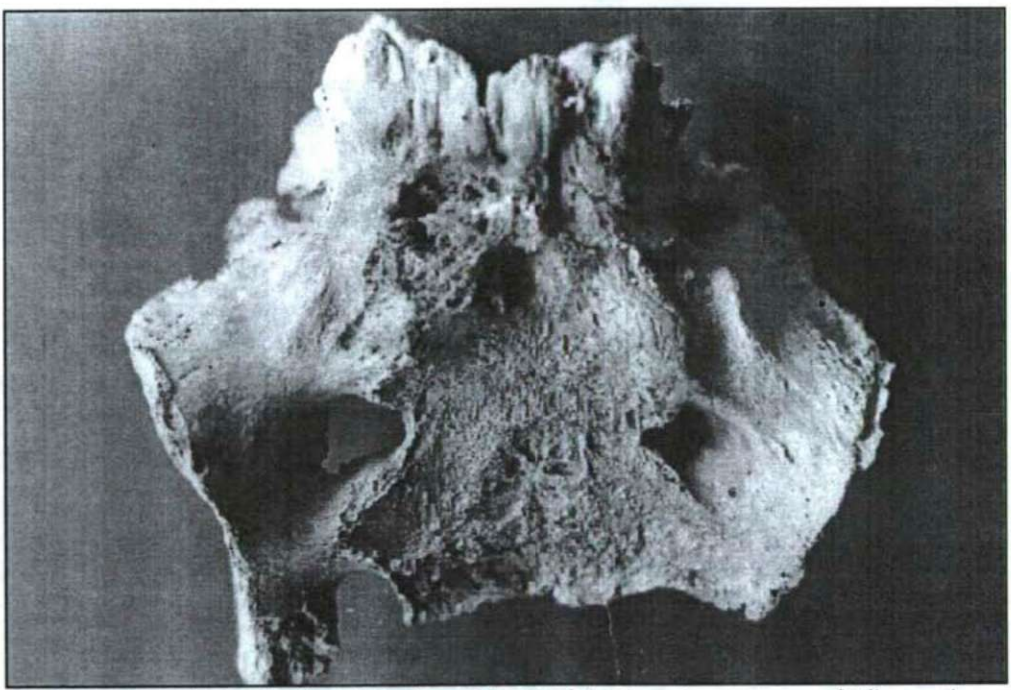

Figure 1. Lumbo-sacral tuberculosis (grave No. 90 of the Avar Age cemetery of Bélmegyer).

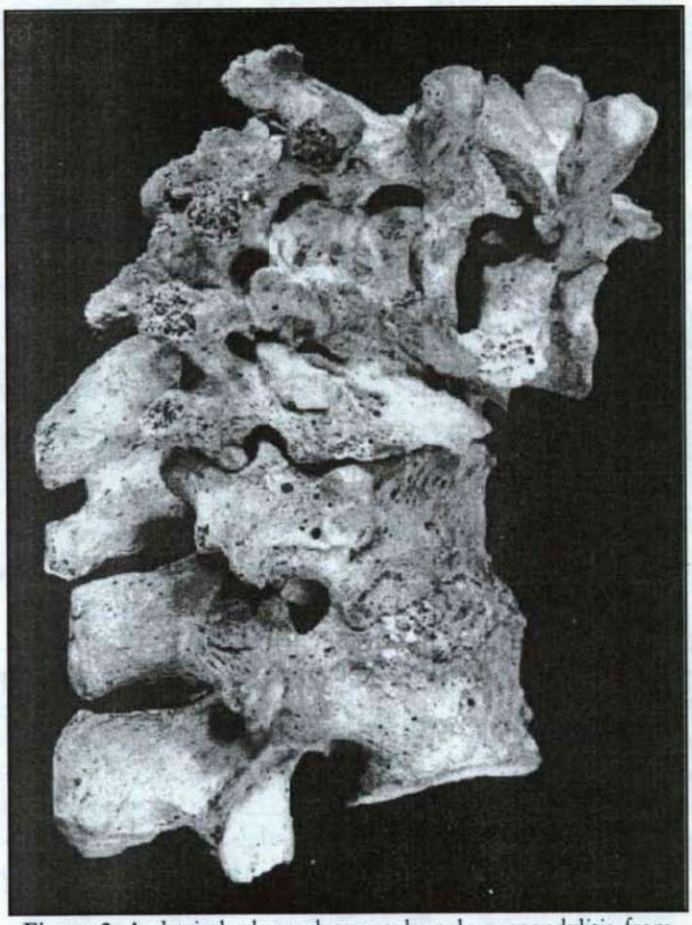

Figure 2. A classical advanced-stage tuberculous spondylitis from the Csongrád-Ellés cemetery (11-13th centuries, grave No. 183).

Although the commonest location of tuberculous alterations is still the vertebral column in the late medieval series, the revealed spinal lesions were caused by more active-stage spondylitis (with less signs of healing) and several cases of rib lesions has also been found. We have to mention an outstanding 17th century series (Bácsalmás, n = 173) in which 6 probable cases of osteotuberculosis can be observed. In the case from the Grave no. 61, the rib lesions (Fig. 3), just like similar alterations on seven other ribs on the same side, refer to tuberculous pulmonary infection and its probable direct spread through the pleura to the bones. We have to mention that the only one previously published palaeopathological case of TB-associated rib lesions from Hungary is also from the 17th century (ÉRY, 1982). Signs of rib lesions with infectious origin in two other skeletons in the series of Bácsal-

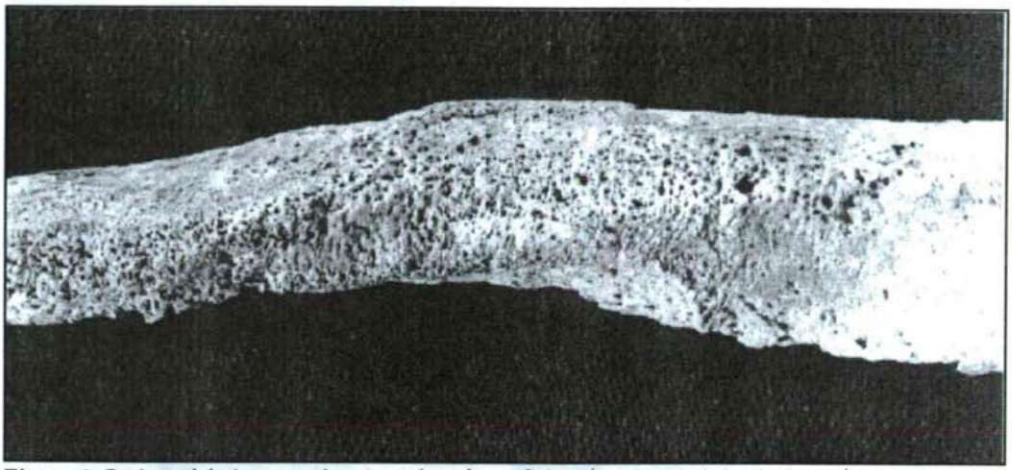

Figure 3. Periosteal lesions on the visceral surface of the 9th right rib (Bácsalmás, 17th century, grave No. 61), indicating tuberculous pulmonary infection and its probable direct spread to the bones.

más, the revealed active-stage („non-healed") vertebral lesions and the relatively high number of the affected skeletons suggest the different virulency of TB in this population compared to series from the Early Middle Ages. Differences in the way of transmission of the disease — for example the fact that pulmonary tuberculosis became more frequent in the populations from the Late Middle Ages — need also to be taken into consideration.

As it is well known in the paleopathological or epidemiological literature, the evolutionary model of TB is controversial (KELLEY, 1989). Tuberculosis presents several complexities to medical historians and paleopathologists because of the biological evolution of the bacteria and, on the other hand, the immunodeficiency, social disruption, and other variables aggravate its incidence. These facts stress the need for an interdisciplinary collaboration among paleopathologists, medical historians, epidemiologists, immunologists and microbiologists, to have a more available paleoepidemiological knowledge on the origin and evolution of human tuberculosis.

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Table 1: Evidences of osseous tuberculosis in past human populations in Hungary (Avar Ages: 7-8th centuries; Hungarian Conquest Period: 10th century)

Archaeological periode and site	Number of skeletons	No. grave	Type of tuberculosis	References
Avar Age: 7-8th centuries				
Bélmegyer	239	65	spinal	Pálfi, 1991
		90	spinal + hip	Pálfi et al, 1992
		215	knee (?)	Pálfi and Csernus, 1990
Szeged-Makkoserdő	152	209	spinal	Marcsik and Pálfi, 1992
		307	spinal	Marcsik, 1983
Csólyospálos	244	17	spinal (?)	Molnár and Marcsik (in press)
Székkutas	518	343	spinal	Pálfi, 1989
		385	spinal (?)	" "
		531	spinal (?)	" "
Pitvaros	209	12	spinal + hip	Molnár et al., 1998
Hetényegyháza	263	156	spinal	Szoboszlai, 1996
Sükösd	363	19	spinal + hip	Marcsik et al., 1997
		208	spinal	Jancsó, 1996
		218	spinal	" "
Avar Age total	1988	14 cases		
10th century				
Sárrétudvari	263	—	—	Pálfi, 1993
Püspökladány	230	—	—	Pauditz, 1995
Sándorfalva	104	—	—	Just, 1988
Algyő	77	—	—	Marcsik and Szalai (in press)
Szegvár-Oromdűlő	93	—	—	Marcsik, 1997
Szeged-Csongrádi út	11	—	—	Maczel, 1998
10th century total	778	—		

Table 2: Evidences of osseous tuberculosis in past human populations in Hungary (Árpádian Age: 11–13th centuries; Hungarian Late Middle Ages: 14–17th centuries)

Archaeological periode and site	Number of skeletons	No. grave	Type of tuberculosis	References
11–13th centuries				
Szegvár-Oromdűlő	259	275	spinal (?)	Marcsik, 1997
Szatymaz	286	—	—	Molnár et al., 1996
Kardoskút	160	—	—	Marcsik (under elaboration)
Püspökladány	371	383	spinal	Pauditz, 1995
Bácsalmás-Óalmás	54	—	—	Bozó, 1994
Bátmonostor	85	9	spinal (?)	" "
Csongrád-Felgyő	38	1	hip	Marcsik and Pálfi, 1993
Kecskemét-Gerőmajor	65	—	—	Ungvári, 1998
Hajdúdorog	612	434	spinal	Újvárosi, 1994
11–13th centuries total	1930	5 cases		
(14–17th centuries)				
Békéscsaba-környék	223	—	—	Farkas et al., 1991
Baja-Pető	209	—	—	Bozó, 1994
Kunfehértó	65	—	—	" "
Nagylak	45	—	—	" "
Röszke	67	—	—	" "
Gerla-Monostor	47	32	spinal	Farkas et al., 1991
Kecskemét-Ferences	323	125	hip (?)	Bozó, 1994
Bácsalmás-Homokbánya	173	39	spinal	Molnár and Pálfi, 1994
(17th century)		61	thoracic cage	" "
		85	thoracic cage	" "
		115	(?)	Széplaki, 1998
		142	spinal	" "
		160	spinal rib (?)	" "
14–17th centuries total	1152	8 cases		